

**County of Henrico**

**Office of Building Construction and Inspections**

**Summary of 2015 Virginia Residential Code Changes**

**Including Changes to Building, Plumbing, Mechanical, Gas and Electrical Codes**

The 2015 Edition of the Virginia Residential Code (the VRC) was adopted by the Commonwealth of Virginia effective September 4, 2018. The one-year grace period during which either the 2015 Edition or the previous 2012 Edition may be used expires on September 4, 2019. All permit applications submitted on or after September 4, 2019, will be reviewed under the 2015 code edition. This summary of changes is not intended to be all-inclusive but includes those changes thought to be most pertinent.

Copies of the 2015 Edition of the VRC and other codes included in the Virginia Uniform Statewide

Building Code are available for free online viewing or for purchase at:

[https://codes.iccsafe.org/category/Virginia?year[]=2012&year[]=2015&page=1](https://codes.iccsafe.org/category/Virginia?year%5b%5d=2012&year%5b%5d=2015&page=1)

If you have questions regarding the 2015 Code Changes feel free to call our office at (804) 501-4360.

**Chapter 1 – Administration**

* 108.2 – Exemption from permit – Increased the square footage of roof decking to be replaced without requiring a permit from 100 ft2  to 256 ft2 (equivalent to 8 sheets of sheathing)unless the decking was fire-retardant treated or protected in some other way to form a fire-rated wall termination.

**Chapter 3 – Building Planning**

* R301.2.1 - Changed the basis for wind design from using “Basic Wind Speed” in previous editions to “Ultimate Design Wind Speed” to correlate with the Virginia Construction Code and ASCE 7-10. The Ultimate Design Wind Speed for Henrico County is 115 MPH
* Table R301.7 –Differentiates deflection limits for structural members of walls and ceilings with brittle finishes, such as plaster & stucco, from members with flexible finishes such as gypsum board.
* R302.1 – Adds Exception #7, allowing walls of dwellings and accessory buildings within 5 feet of a lot line to be built without a fire-resistance rating where local ordinance prohibits the walls of the structures on adjacent lots from being closer than 10 feet to each other at any point along the exterior walls. This will allow zero lot line structures to be built without the requirement of obtaining a code modification.
* Tables R302.1(1) and R302.1(2) – 1) Projections with a fire separation distance less than 2 feet are not allowed. 2) Per footnotes, the fire-resistance ratings of roof eaves projections with a fire separation distance between 2 and 3 feet may be reduced to 0 hours where fire blocking is provided or gable vent openings are not present. 3) Table R302.1(2), footnote a allows fire separation distances to be reduced to 0 feet where all dwellings in a subdivision are sprinklered per section P2904 and have a minimum 6 foot open setback yard on the adjoining lot.
* R303.4 – All dwelling units are now required to be provided with mechanical ventilation in accordance with Section M1507, regardless of the air infiltration rate.
* R308.4.2 – Where glazing is on a wall perpendicular to the plane of a door in a closed position and within 24 inches of the hinge side of an in-swinging door, safety glazing is required for an individual fixed or operable panel where the bottom edge of the glazing is within 60 inches of the floor. Safety glazing was formerly required on both the hinge and the latch sides. The requirement for glazing on a wall in the same plane as the door and within 24 inches of either side of the door in a closed position to be safety glazing has not changed.
* R308.4.5 – Glazing and wet surfaces – This section clarifies that glazing 60 inches or more measured horizontally, in a straight line from a shower’s water’s edge is not required to be safety glazed. This formerly required a modification – no longer needed.
* R308.4.7 – Glazing adjacent to the landing at the bottom of a stairway and less than 36 inches above the landing and within a 60-inch horizontal arc less than 180 degrees from the bottom tread nosing shall be safety glazed.
* R310.3.2.1 - Bulkhead enclosures (e.g. for exterior basement stairs) are required to provide proper drainage by connecting to the building’s foundation drainage system or approved alternative method.
* R310.5 – Clarifies that emergency escape and rescue openings (EERO’s) are required: 1) in basements of new dwelling additions, unless there is an EERO in an existing basement that is accessible from the new basement; and 2) in all new sleeping rooms in additions.
* R310.6 – Clarifies that EERO’s are not required where existing basements undergo alterations or repairs, unless new sleeping rooms are added in the basement, in which case the sleeping room shall be provided with an EERO.
* R312.1.2 – Clarifies that the height of guards adjacent to fixed seating shall not be less than 36 inches measured from the adjacent walking surface instead of from the surface of the fixed seating.
* R314.3 Note changes in locations of smoke alarms as follows:
	+ #4 – Not less than 3 feet from the door or opening of a bathroom that contains a bathtub or shower.
	+ R314.3.1 – Minimum distances from cooking appliances per smoke alarm type: Ionization – 20 feet; Ionization with an alarm-silencing switch – 10 feet; photoelectric – 6 feet.
* R314.7 – New section addressing the installation of fire alarm systems in lieu of smoke alarms. Requires: 1) compliance with R314.7.1 through R314.7.4 and the household provisions of NFPA 72; 2) smoke detectors listed in accordance with UL 268; 3) the system must be installed as a permanent fixture of the dwelling.
* R315 - Carbon monoxide (CO) alarms must be listed as complying with UL 2034, with combination smoke and CO alarms shall be listed in accordance with UL 2034 and UL 217. Also provides requirements for the use of a CO detection system, installed as a permanent fixture of the dwelling, to be used in lieu of CO alarms.
* R324 – A new section added to address Solar Energy Systems, including solar thermal systems for space heating or cooling, hot water heating and swimming pool heating (refers to Ch. 23 and the International Fire Code) and for photovoltaic systems for production of electrical energy installed on or above roof covering (refers to section R909) , integrated into the roof covering (refers to section R905), or ground-mounted (per Section R301).
* R326 – Changed Section 305.2.9 Equipment Clear Zone of the International Swimming Pool and Spa Code (ISPSC) to read “equipment, including pool equipment such as pumps, filters and heaters shall not be installed within 36 inches (914 mm) of the exterior of the barrier when located on the same property.”
* R331 – A new section moving the Interior Passage requirements from section R311.2.1, with clarifications as follow: 1) The section is applicable to new dwellings that have both a kitchen and a living area on the same floor as the required egress door, and not applicable to additions, reconstruction, alteration or repair. 2) An interior passage route is required to the kitchen and to the living area, to at least one bedroom if one is located on the same floor, and to at least one bathroom if there is one on the same floor level that contains a water closet, lavatory, and bathtub or shower. 3) Access to fixtures such as an enclosed toilet area, is not required to comply with the minimum 34-inch opening width.

**Chapter 4 – Foundations**

* R403.1.1 & Table R403.1(1), (2), & (3) – New tables are provided that tabulate the minimum sizes for footings based on the number of stories, type of structure, snow load, and soil bearing capacity
* R403.1.6 – A) Clarifies that wood sole plates of braced wall panels at building interiors on monolithic slabs are required to be anchored with minimum ½” anchor bolts with max. spacing of 6 feet or approved equivalent anchorage. B) Other interior bearing wall sole plates on monolithic slab foundations shall be positively anchored with approved fasteners. C) Anchor Bolts for all sill plates must be placed in the middle third of the sill plate, meaning that wider sill plates may be required.
* R404.1.9.2 – Deleted requirement that piers supporting floor girders have a minimum dimension of 12” – OK to use 8” x 16” CMU for girder line piers.
* R404.4 - Specifies that an engineer’s design is required for retaining walls supporting more than 48 inches of unbalanced backfill. Also, pertinent to retaining walls and not a change, retaining walls supporting 3 feet or more of unbalanced fill require permitting per Section 108.2.
* R408.2 Exception – Clarifies that foundation vents are not required to be placed within 3 feet of corners of under-floor space when the ground surface is covered with a Class 1 vapor retarder and cross-ventilation of the space is provided. This allows construction of bump-outs of 3 feet or less without vents.

**Chapter 5 – Floors**

* R502.5 – Tables for allowable girder and header spans have been moved to chapter 6.
* R507.1 and R507.2.4 – For decks supported by attachment to an exterior wall, lateral load connections are required and are permitted to be in accordance with either:
	+ Figure R507.2.3(1) with tension hold-down devices with a design capacity of not less than 1500 lbs., installed in not less than two locations per deck, within 24 inches of each end of the deck, or
	+ Figure R507.2.3(2) with tension hold-down devices with a design capacity of not less than 750 lbs., installed in not less than four locations per deck.
* R507.2 – Clarifies the connection of the deck ledger to the band joist.
* R507.3 – Includes new requirements for plastic composite deck boards, stair treads, guards and handrails, including 1) labeling in accordance with R507.3.1; 2) exhibiting a flame spread index not exceeding 200; 3) must be decay resistant in accordance with ASTM D7032; 4) must be installed in accordance with this code and manufacturer’s instructions.
* R507.4 –Wood decking shall be attached to joists using min. (2) 8d threaded nails or (2) #8 wood screws.

**Chapter 6 – Wall Construction**

* R602.7 – References Tables R602.7(1), R602.7(2) and R602.7(3), which include span tables for girders and headers, now including single member headers and rim board headers. Note that the tables are based on the use of #2 lumber for all species noted, including Southern Pine. (2012 Edition used #1 SP)
* R602.7.2 – Specifies the construction of rim board headers, including the number of full height studs required at each end – not less than1/2 of the number of studs displaced by the header according to the maximum stud spacing per Table R602.3(5). Rim board headers supporting concentrated loads are to be designed in accordance with accepted engineering practice.
* R602.7.5 – Full-height studs (king studs) adjacent to each end of a header shall be end-nailed to the header with four 16d nails. The 2012 edition required four 12d nails.
* Figures R602.10.6.2 (Method PFH), R602.10.6.3 (Method PFG) and R602.10.6.4 (Method CS-PF) – Changes are as follows: 1) If a ½” spacer is used for the header, it shall be placed on the back side of the header; 2) The king stud shall be fastened to the header with 6-16d nails.
* Figure R602.10.6.4 – Method CS-PF – A notation has been added to the figure that clarifies that the extension of a single portal frame must continue on the other side of the opening with a wall panel meeting the minimum length requirement of Table R602.10.5.
* R602.10.9 – An exception has been added with requirements for use of approved post-installed adhesive anchoring systems as an alternate to the designs in Figure R602.10.9 for construction of stem walls supporting braced wall panels.

**Chapter 8 – Roof-Ceiling Construction**

* Sections R802.3, R802.4, and R802.5 have been reformatted to specifically address construction regarding ridge boards/beams, rafters, and ceiling joists, respectively.
* R802.4.2 – Requires the rafters be framed with no more than 1-1/2” offset from each other to a ridge board or directly opposite each other with a collar tie, gusset plate or ridge strap.
* R802.5.2 – Addresses the use of a “kicker connected to the ceiling diaphragm” as a means of providing a rafter tie, which is now a common construction method.
* Table R802.11 – The tabulated values for uplift connection forces are now based on the Ultimate Design Wind Speed and are slightly different from previous edition values. The values determine whether prescriptive rafter/truss connections per Table R602.3(1) may be used or special connections are required.

**Chapter 9 – Roof Assemblies**

* Tables R905.1.1(1) and R905.1.1(2) have been added which tabulate the referenced standards for underlayment types [Tables R905.1.1(1)] for each of the types of roof coverings and the application of underlayments for each type of roof covering.

**Chapter 10 – Chimneys and Fireplaces**

* R1003.18 – Chimney Clearances - Decreases from 12” to 8” the required minimum distance from inside surface of the nearest flue lining to combustible sheathing, siding, and trim.

**Chapter 11 – Energy Efficiency**

* N1103.3 – The visual inspection option for HVAC ducts has been deleted. A duct air leakage test is now required.
* N1104.1 – Lighting Equipment – Not less than 75% of permanently installed lighting fixtures shall be high-efficacy lamps (Exception: Low voltage)

**Significant Code Changes related to Residential Trade Permits**

**Plumbing**

**P2602.3 Tracer wire** - A tracer wire (min. 18 AWG copper) is now required for nonmetallic water services that connect to public systems. At a minimum, one end of this wire shall terminate at meter vault or at building wall (outside). This will pertain to new and replacement water services.

**P2603.2.1 Protection against physical damage** - The minimum clearance distances from concealed piping to the edge of the framing members has been reduced from 1 ½” to 1 ¼”.

**P2801 Water heater drain valves and pans** – 1) Requires drain valves with a threaded outlet. 2) aluminum and plastic pans of a prescribed thickness are now allowed. 3) Plastic pans shall not be installed beneath a gas fired water heater.

4) Establishes the rule: where a pan was not previously installed, a pan drain shall not be required for a replacement water heater installation.

**P2804.6.1 Water heater relief valve discharge piping** - Item 10 requires the T&P valve piping to terminate not less than two (2) times the discharge pipe diameter above the floor or waste receptors flood level rim, and not more than 6”.

Item 14 requires Pex or PE-RT tubing used as discharge piping to be increased by one nominal size greater than the relief outlet. This is to allow for the fittings that decrease the I.D. of this discharge piping.

**P3003.9 Solvent cementing of PVC joints** – Added an exception not requiring primer on non-pressure DWV piping, based on recent testing by the NSF that determined that the bonding forces of unprimed connections exceed requirements for gravity DWV systems. However, many manufacturers require the use of primer and some glues cannot be used without a primer. Glues used without primer must conform to ASTM D2564. Where conflicts occur between the code and manufacturer’s installation instructions, the more restrictive shall apply.

**P3201.2 Trap seal protection against evaporation** – Traps subject to evaporation are to be protected by trap seal primer valves or devices. Barrier type trap seal-protection devices, which are now approved under 2015 VRC, must comply with the ASSE 1072 standard and be installed in accordance with the manufacturer’s instructions.

**Mechanical**

**N1103.3 Duct sealing and testing -** The visual inspection option for HVAC ducts has been deleted. A duct air leakage test is now required, with testing results submitted to the inspector. Exception: Systems located entirely within the building envelope.

**M13051.3.1 Electrical Requirements -** Luminaires installed for the appliance location in attic or crawl that are required to have lamp guards or be protected by its location surroundings.

**M1411.4 & G2404.11 (307.6) Condensate pumps** Condensate pumps located in uninhabitable spaces must be connected to the appliance to shut down the equipment in the event of pump failure.

**M1502.4.5.3 - Dryer exhaust duct power ventilators** to increase the allowable exhaust duct length for clothes dryers are now code recognized and must be installed per the manufacturer’s installation instructions. Provide copy of instructions onsite for inspection.

**M1506.2 Exhaust duct length –** Table M1506.2 establishes maximum exhaust and supply duct lengths used with ventilating equipment based on duct diameter, type of duct and air flow rating.

**Gas**

**G2411.1.1 Electrical bonding of corrugated stainless-steel tubing** - The maximum allowable length of the bonding jumper for corrugated stainless-steel tubing (CSST) is 75 feet. CSST with a listed arc-resistant jacket or coating is considered to be bonded where it is connected to appliances that are connected to the equipment grounding conductor of the circuit supplying that appliance. Be aware that non-power vented gas water heaters and fire pits have no electrical connections, and therefore no equipment ground, and therefore will still require bonding.

**G2421.2 Medium – Pressure regulators** - A union shall be installed within 1’ of either side of the MP regulator when it is connected to rigid piping.

**G2427.4.1 & G2427.6.8.3 Plastic piping** - Plastic piping used for venting appliances shall be of the specific plastic piping material and size specified by the appliance manufacturer, identified in the manufacturer’s installation instructions. Installation instructions shall be on site for inspections.

**Electrical**

\*NEC code wide change in nominal voltage from 600 volts to 1000 volts.

NEC 210.8(A)(7) &IRC E3902.7- All receptacles within 6 feet of all sinks require GFCI protection. This section formerly required this protection just for counter-top receptacles.

NEC 210.8(A)(9) &IRC E3902.8-. All receptacles installed within 6 feet of the outside edge of all bathtubs or showers now require GFCI protection

NEC 210.8(A)(10) &IRC E3902.9- All receptacles in laundry areas now require GFCI protection.

NEC 210.8(D) Dishwashers, whether hardwired and cord and plug connected, now require GFCI protection.

NEC 210.12& VRC E3902.16 Receptacles installed in bedrooms of 1 and 2 family dwellings require Arc-Fault protection (AFCI). Permits for this type of construction will state they are permitted using IRC (International Residential Code).

NEC 210.17 &IRC E3702.13 Electric Vehicle Branch Circuit. Outlets installed for charging electric vehicles shall be supplied by a separate branch circuit, with no other outlets.

NEC 210.52(G)(1) &IRC E3901.9. Garage receptacle outlets must be served by a separate branch circuit with no other outlets. One outlet is required for each car space. Car space is not determined by number of garage doors

NEC 250.122(B) When an ungrounded conductor is increased in size for voltage drop, for reasons unrelated to minimum ampacity requirements of conductors, the equipment ground must also be upsized proportionately.

NEC 404.2© &IRC E4001.15 Switches Controlling Lighting Loads. This change added more circumstances where an ungrounded conductor is not required at the location where switches control lighting loads

NEC 406.9(B)(1) & IRC E4002.9 - 15 and 20 amp 125- and 250-volt receptacles installed in a wet location now require in-use covers rated extra duty.

NEC 445.11 Generator Marking. All generators over 15KW shall provide marking from the manufacturer whether the generator neutral is bonded to the generator frame. Where bonding of a generator is modified in the field additional marking is required to indicate if the generator neural is bonded to the generator frame.

NEC 680.42(B) Bonding. An equipotential bonding grid is not required for outdoor spas and hot tubs when the installation meets the 4 requirements of this section.(1)listed as self- contained spa.(2) Listed for outdoor use.(3) Installed per manufactures instructions.(4) The top rim is at least 28” above grade and at least 30” from any perimeter surfaces.